

**TSG-RAN Meeting #12
Stockholm, Sweden, 12 - 15 June 2001**

RP-010325

Title: Agreed CRs (Rel-5) for WI "Open interface between the SMLC and the SRNC within the UTRAN to support A-GPS Positioning"

Source: TSG-RAN WG2

Agenda item: 9.4.3

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio	Workitem
R2-011182	agreed	25.305	054		Rel-5	lupc architectural aspects modifications	F	5.0.0	5.1.0	LCS-INTF
R2-011183	agreed	25.305	055		Rel-5	Removal of RAN3 dependency w.r.t. PCAP signalling flows	F	5.0.0	5.1.0	LCS-INTF
R2-011506	agreed	25.305	056	2	Rel-5	PCAP message flows	C	5.0.0	5.1.0	LCS-INTF

CHANGE REQUEST

⌘ **25.305 CR 054** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ lupc architectural aspects modifications		
Source:	⌘ TSG-RAN WG2		
Work item code:	⌘ LCS-INTF	Date:	⌘ 17 May 2001
Category:	⌘ F	Release:	⌘ REL-5
	Use <u>one</u> of the following categories: F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘ Some architectural aspects of lupc need to be clarified. Moreover, residual errors remain in the specification w.r.t. lupc.
Summary of change:	⌘ Clarifications are added w.r.t. the functional split between RNC and SAS and requirements for timing assistance. Some minor errors are also corrected.
Consequences if not approved:	⌘ The unspecified parts will lead to possibilities of misinterpretation.

Clauses affected:	⌘ 5.2.1.1, 5.2.1.2.1, 5.2.5, 6.5a, 6.6.5, 7.3.1, 7.3.4		
Other specs affected:	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
Other comments:	⌘ Agreed at lupc Ad Hoc.		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

UNCHANGED TEXT IS OMITTED

5.2.1.1 Serving RNC

The SRNC is a network element of UTRAN and contains functionality required to support LCS in one PLMN.

The SRNC provides the following functionality:

- request of information from other RNC:
The SRNC may request information regarding UE Positioning from other RNCs.
- flow control of positioning requests:
If several simultaneous positioning requests are present within one SRNC, the SRNC co-ordinates the positioning requests taking into account priority of the requests (e.g. for Emergency Clients).
- positioning method selection:
The positioning method selection is based on the location request, QoS, capabilities of UE Positioning elements and UE positioning capabilities.
- position calculation:
The SRNC may calculate the position of a UE and may also support conversion of the position estimate between different geographic reference systems. In case RNC estimates the UE position, it is also responsible to estimate the accuracy of the position estimate. This accuracy estimate should include, for example, the effect of geometric dilution of precision (GDOP), the capabilities of the signal measuring hardware, the effects of multipath propagation and the effects of timing and synchronisation unknowns. The accuracy should be returned as a measure of distance in the same units as the position estimate. The accuracy zone may be reported as the axis and orientation of an ellipse surrounding the position estimate.
- provide UE Positioning assistance data:
The SRNC may provide assistance data in the support of the various positioning methods.
- ~~provide UE Positioning assistance data:
The SRNC may provide assistance data in the support of the various positioning technologies.~~
- Overall UE Positioning coordination and control:
If both an SAS and an SRNC with A-GPS SMLC internal functionality are available, the SRNC is responsible for the overall coordination and control of UE Positioning. For example, although the SAS has a position calculation function, the SRNC may also have a position calculation function. The SRNC is responsible for managing the co-ordination and control of these multiple resources.

The SRNC, of course, also provides CRNC functionality regarding UE Positioning for its associated Node Bs and LMUs.

5.2.1.2 Other RNC

5.2.1.2.1 Controlling RNC

The CRNC provides the following functionality:

- resources management:
When allocating resources the CRNC determines which UTRAN elements are involved and what to measure. The RNC is also responsible for managing the effect of UE Positioning operations on the overall performance of the radio network by:
 - controlling the variation of the UL and DL signal power level due to UE Positioning;
 - calculating the DL and UL power/interference due to UE Positioning;

- to admit/reject the new positioning requests;
- co-operating with Admission Control, and entities of the RRM (such as power control) to provide the system stability in terms of radio resources;
- controlling the IPDL mechanism for OTDOA measurements. This may include the overall control of the periodical measurement fulfilment. Co-ordination among RNCs (e.g. to assure non-overlapping idle periods) will be communicated through the Iur interface.
- broadcast of system information:
The CRNC broadcasts information in support of the selected positioning method. This broadcast information may be specially coded (i.e. encrypted) to ensure its availability only to subscribers of the service. For the case where there exists an SAS, the broadcast data is generated within the CRNC and/or in the SAS, in this latter case only with regards to specific GPS information, and then forwarded to the CRNC over the Iupc interface for eventual broadcast over the Uu interface.

The information to be broadcast could include, for example:

- identification and spreading codes of the neighbouring cells (the channels that are used for measurements);
- Relative Time Difference (RTD), i.e. the timing offsets, asynchronicity between base stations, could be based on measurement results obtained by LMUs;
- roundtrip delay estimates in connected mode;
- the geographic position co-ordinates of the neighbouring Node B;
- the idle period places within the frame structure for multiple cells;
- the local time-of-day;
- reference time, reference position, DGPS corrections, ephemeris and clock data, and almanac data.
- request UE Positioning related measurements from its associated Node Bs and LMUs:
The measurements requested by CRNC from its associated Node Bs and LMUs is dependant on the positioning method used. The following measurement returned by a LMU to a CRNC has a general status and may be used for more than one positioning method:
 - radio interface timing information

Signalling between Node B or LMU and CRNC is transferred using Iub signalling.

UNCHANGED TEXT IS OMITTED

5.2.5 Stand-alone A-GPS SMLC

An SAS performs the following procedures:

- Provide GPS assistance data to the SRNC, for both UE-assisted and UE-based method types, to be delivered through point-to-point or broadcast channels to UE;
- Act as an A-GPS location calculation server if the A-GPS location estimates (UE assisted GPS) are not to be calculated in the SRNC.

The SAS communicates with the SRNC over the Iupc interface enabling it to forward GPS assistance data to UEs and it receives GPS measurement data from the RNCUEs.

When timing assistance is needed, the SAS relies on the RNC (and on the possibility to have GPS receivers co-located with the RNC, the Node Bs and/or present in the UEs) to obtain that.

UNCHANGED TEXT IS OMITTED

6.5a SAS to SRNC signalling for PCAP

The stand-alone A-GPS-SMLC to SRNC signalling is described in clause 6.6.5.

UNCHANGED TEXT IS OMITTED

6.6.5 Iupc Interface

UE Positioning operations on the Iupc interface are generally described in [27]. ~~This That specification defines in more detail the procedures needed for messages for the A-GPS positioning method. Signalling exchanges between an SRNC and an SAS will be specified in the PCAP protocol.~~

The Iupc interface is used to allow communication between an SRNC and an SAS. This interface is used to ~~pass signal measurement requests and responses position estimate requests and responses~~ as well as ~~A-GPS positioning related information for A-GPS positioning methods using mechanisms consistent with the other internal UTRAN interfaces.~~ The Iupc interface is used for ~~providing the RNC with A-GPS data to be used for~~ both point-to-point and broadcast purposes. The Iupc interface uses an Iups-like protocol stack for the transport layer ~~which is described in~~ [28].

7.3 Exception procedures

7.3.1 Procedures in the SRNC

When a positioning attempt fails due to failure of a position method itself (e.g. due to inaccurate or insufficient position measurements and related data) and the SRNC is unable to instigate another positioning attempt (e.g. due to a requirement on response time), the SRNC may return a Location response over the Iu interface containing a less accurate position estimate. If a less accurate estimate is not available or will not meet the accuracy requirement, the SRNC may instead return a Location response message containing no position estimate and indicating the cause of failure.

NOTE: Need to check that Iu has enough flexibility

When a positioning attempt is interrupted by some other unrecoverable error event inside the SRNC, the SRNC shall immediately terminate the positioning attempt and return a Location Response message containing the reason for the positioning attempt cancellation. In that case, SRNC may also abort any dialogue previously opened with an LMU for the purpose of instigating position measurements for the UE being located.

In networks that include an SAS, the SRNC will receive a PCAP ~~Position Estimate Location~~ response on the Iupc interface and then return a Location response over the Iu interface containing the results that were provided over the Iupc interface (a less accurate position estimate, cause of failure indication, etc). This is described in Subclause 7.3.4.

UNCHANGED TEXT IS OMITTED

7.3.4 Procedures in the SAS

When an A-GPS positioning attempt fails (e.g. due to inaccurate or insufficient position measurements and related data), the SAS may return a PCAP ~~Position Estimate Location~~ response over the Iupc interface containing a less accurate position estimate. If a less accurate estimate is not available or will not meet the accuracy requirement, the SAS may instead return a PCAP ~~Position Estimate Location response~~ failure message containing no position estimate and indicating the cause of failure.

When a positioning attempt is interrupted by some other unrecoverable error event inside the SAS, the SAS shall immediately terminate the positioning attempt and return a PCAP ~~Position Estimate Location~~ failure message containing the reason for the positioning attempt cancellation.

CHANGE REQUEST

⌘ **25.305 CR 055** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Removal of RAN3 dependency w.r.t. PCAP signalling flows		
Source:	⌘ TSG-RAN WG2		
Work item code:	⌘ LCS-INTF	Date:	⌘ 17 May 2001
Category:	⌘ F	Release:	⌘ REL-5
	<p><i>Use <u>one</u> of the following categories:</i></p> <p>F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>	<p><i>Use <u>one</u> of the following releases:</i></p> <p>2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)</p>	

Reason for change:	⌘ The current 25.305 is dependent on RAN3 specifications when it comes to describing the PCAP signalling flows in subclause 6.6.5.1. This dependency is on the other hand not present for what regards for example lur, where a reference is made.
Summary of change:	⌘ For the sake of independency between specifications handled by different working groups, the description of PCAP signalling flows is removed and a reference is added.
Consequences if not approved:	⌘ There would be a dependency between RAN2 and RAN3 specifications. The description of lupc would be also inconsistent with the one of other UTRAN internal interfaces within 25.305 itself.

Clauses affected:	⌘ 6.6.5.1, 6.6.5.1.1, 6.6.5.1.2, 6.6.5.1.3, 6.6.5.1.4, 6.6.5.1.5		
Other specs affected:	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
Other comments:	⌘ Agreed at lupc Ad Hoc		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.6.5.1 Signalling between SRNC and SAS

The signalling between RNC and SAS is done by using PCAP procedures specified in [27].

6.6.5.1.1 PCAP Position Estimate

This position estimate call flow is applicable to UEs that support the following method types:

- UE-assisted;
- UE-assisted is preferred, but UE-based is allowed;
- UE-based is preferred, but UE-assisted is allowed.

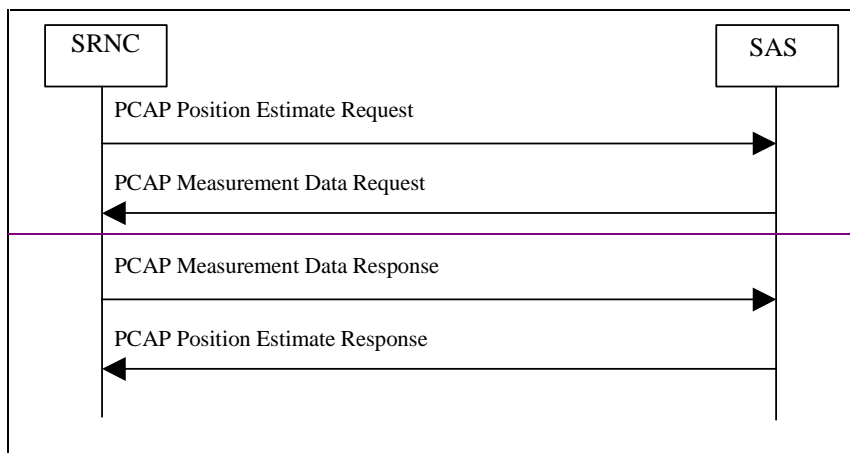


Figure 6.6: PCAP Position Estimate Message Flow

1. The SRNC determines that the SAS should be invoked via a PCAP Position Estimate Request Message. This message contains data necessary for the SAS to obtain a position estimate for a UE. Specifically the following data is included: an initial position estimate of the UE, a GPS-UTRAN time relationship-uncertainty, and the method type (UE-based / UE-assisted preferences or UE-assisted).
2. The SAS prepares the appropriate GPS assistance data and sends a PCAP Measurement Data Request Message to the SRNC. The SRNC and UE then perform the call flow shown in Figure 6.1. For UE-based scenarios, the position is available to the SRNC at this point.
3. For UE-assisted scenarios, the SRNC sends the GPS measurements obtained from the UE to the SAS where further processing occurs to obtain the position estimate of the UE. In UE-based scenarios the position is not returned to the SAS, but a PCAP Measurement Data Response Message is still returned such that the PCAP Measurement Data Request Message is properly terminated.
4. For UE-assisted scenarios, the SAS calculates the position estimate and forwards it to the SRNC in a PCAP Position Estimate Response Message. If the SAS can not fulfil the request, a PCAP Position Response Failure Message is returned. In UE-based scenarios the position estimate is not returned to the SRNC, but the PCAP Position Estimate Response Message is still returned such that the PCAP Position Estimate Request Message is properly terminated.

6.6.5.1.2 PCAP Implicit GPS Assistance Data

The implicit GPS assistance data call flow is triggered by a request for a position estimate for a UE that supports only the UE based positioning method.

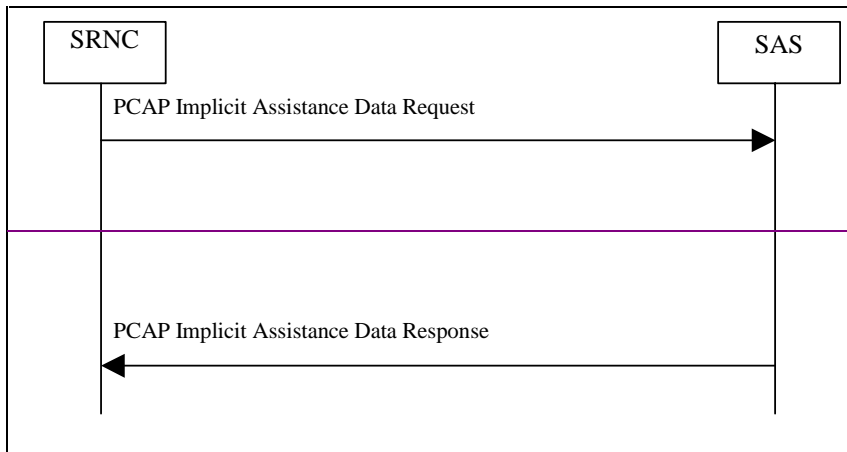


Figure 6.7: PCAP Implicit GPS Assistance Data Message Flow

1. The SRNC determines that the SAS should be invoked via a PCAP Implicit Assistance Data Request Message. This message informs the SAS that a UE-based positioning attempt is about to occur and requests that the SAS generate the appropriate GPS assistance data. This message contains an initial position estimate of the UE and a GPS-UTRAN time relationship uncertainty.
2. The SAS prepares the appropriate GPS assistance data and sends a PCAP Implicit Assistance Data Response Message to the SRNC. The SRNC and UE then perform the call flow shown in Figure 6.1. If the SAS can not fulfil the request, a PCAP Implicit Assistance Data Failure Message is returned.

6.6.5.1.3 PCAP Explicit GPS Assistance Data

The explicit GPS assistance data call flow is triggered by a request for GPS assistance data initiated by a UE by means of NAS signalling or by Access Stratum (i.e., a UE requesting additional assistance data during a position estimate call flow (Figure 6.6) or following an implicit assistance data call flow (Figure 6.7)).

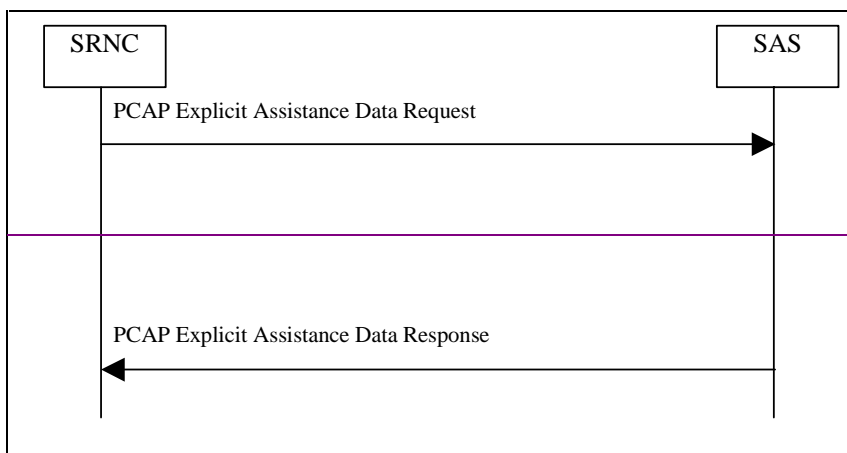


Figure 6.8: PCAP Explicit GPS Assistance Data Message Flow

1. The SRNC determines that the SAS should be invoked via a PCAP Explicit Assistance Data Request Message. This message contains an initial position estimate of the UE, a GPS-UTRAN time relationship uncertainty, and a list of the types of GPS assistance data being explicitly requested.
2. The SAS prepares the requested GPS assistance data and sends a PCAP Explicit Assistance Data Response Message to the SRNC. The SRNC and UE then perform the call flow shown in Figure 6.2. If the SAS can not fulfil the request, a PCAP Explicit Assistance Data Failure Message is returned.

6.6.5.1.4 PCAP Broadcast Data

The broadcast data call flow is triggered by requests for GPS broadcast data by a CRNC.

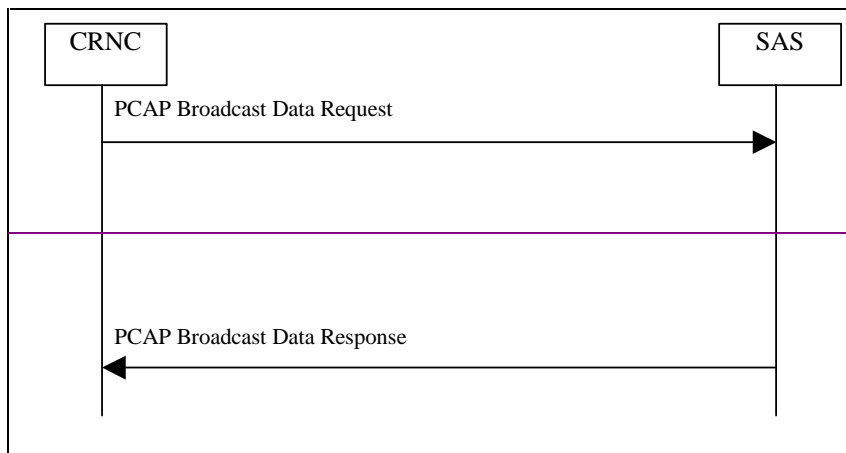


Figure 6.9: PCAP Broadcast Data Message Flow

1. The CRNC determines that the SAS should be invoked via a PCAP Broadcast Data Request Message. This message contains data necessary for the SAS to provide the appropriate GPS broadcast data the SRNC. Specifically it contains a reference position estimate and a GPS-UTRAN time relationship uncertainty.
2. The SAS prepares the appropriate GPS broadcast data and sends a PCAP Broadcast Data Response Message to the SRNC. If the SAS can not fulfil the request, a PCAP Broadcast Data Failure Message is returned.

6.6.5.1.5 PCAP Abort

If the SRNC needs to terminate a positioning attempt for any reason (i.e., SRNS relocation) it shall send a PCAP Abort Message to the SAS.

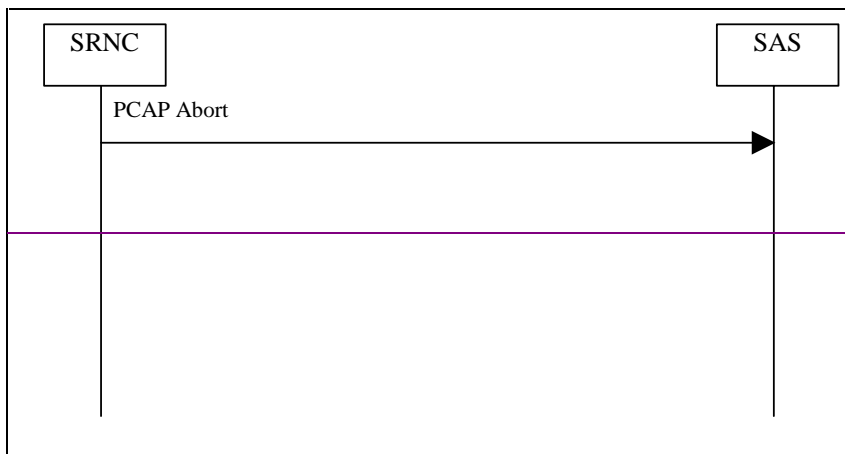


Figure 6.10: PCAP Abort Message Flow

1. The SRNC determines that an ongoing positioning attempt in progress at an SAS should be stopped and sends a PCAP Abort Message to the SAS. This message informs the SAS to terminate all processing associated with a particular positioning attempt.

**3GPP TSG-RAN WG2 Meeting #21
Busan, Korea, May 21-25, 2001**

R2-011506

CR-Form-v4
CHANGE REQUEST
⌘ 25.305 CR 056 ⌘ rev r2 ⌘ Current version: 5.0.0 ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ PCAP Message Flows		
Source:	⌘ TSG-RAN WG2		
Work item code:	⌘ LCS-INTF	Date:	⌘ 2001-05-31
Category:	⌘ C	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘ During the opening plenary of RAN2 #21, it was decided that PCAP message flows that reflect the current proposed stage-3 lupc functionality should be added back to 25.305 at some point.
Summary of change:	⌘ <ul style="list-style-type: none"> • A reference to stage-3 PCAP procedures is added to section 6.6.5.1. • The 5 existing PCAP message flows in sections 6.6.5.1.1 – 6.6.5.1.5 are replaced with two message flows that represent the current proposed stage-3 lupc functionality. • Indentation of sentence, “when the chosen...”, changed to align with above paragraph in section 6.6.5.1.1 (w.r.t. R2-011361, change shown in yellow) • Comments have been incorporated from e-mail approval process following RAN WG2/WG3 #21. Changes from CR 056r1 to 056r2 are: <ul style="list-style-type: none"> • Instances of “assistance information” replaced with “GPS-related information” in section 6.6.5.1.2. • Second sentence added to paragraph above Figure 6.7 to indicate possible usage of GPS-related information by RNC. • Optional arrow for “PCAP Information Exchange Initiation Failure” added to Figure 6.7 (shaded in green). • Bullet #2 under Figure 6.7 split into two parts to more clearly distinguish initiation success case from initiation failure case.
Consequences if not approved:	⌘ If not approved, then 25.305 will not contain PCAP message flows that properly reflect the current proposed stage-3 lupc functionality.

Clauses affected:	⌘ 6.6.5.1, 6.6.5.1.1, 6.6.5.1.2, 6.6.5.1.3, 6.6.5.1.4, 6.6.5.1.5		
Other specs affected:	⌘ <input type="checkbox"/> Other core specifications	⌘ <input type="checkbox"/>	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
Other comments:	⌘		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.6.5.1 Signalling between SRNC and SAS

The signalling between RNC and SAS is done by using PCAP procedures specified in [27].

6.6.5.1.1 PCAP Position Calculation Estimate

The PCAP Position Calculation message flow illustrates how an SRNC invokes an SAS to calculate a position estimate of a UE.

The SRNC initiates the PCAP Position Calculation message flow for UEs that support the following positioning method types:

- UE assisted;
- UE assisted is preferred, but UE based is allowed;
- UE based is preferred, but UE assisted is allowed;

when the chosen positioning method type is 'UE Assisted'.

For UEs that only support the UE based positioning method or that, supporting both, have selected the 'UE Based' option, the PCAP Position Calculation message flow is not applicable.

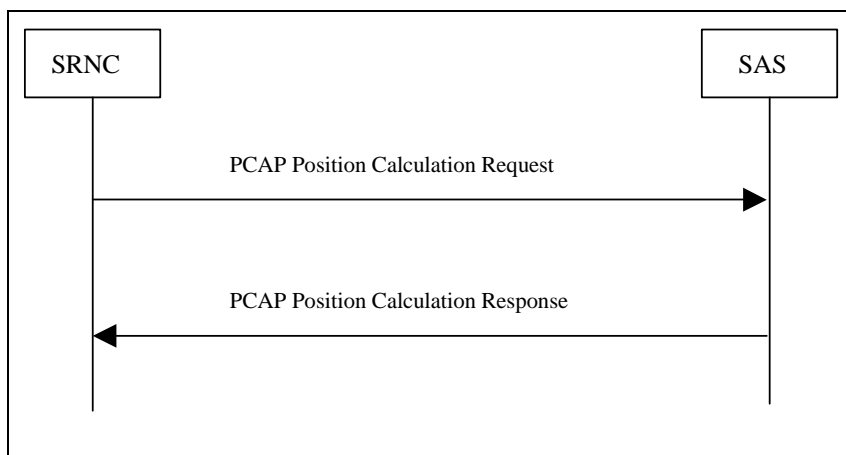


Figure 6.6: PCAP Position Calculation Message Flow

1. The SRNC initiates a PCAP Position Calculation Request Message. This message contains data necessary for the SAS to calculate a position estimate for a UE.
2. If the SAS is able to calculate the position estimate, it shall return it to the SRNC in a PCAP Position Calculation Response Message. If the SAS cannot fulfil the request, it shall return a PCAP Position Calculation Failure Message to the SRNC.

6.6.5.1.2 PCAP Information Exchange

The PCAP Information Exchange message flow illustrates how an RNC initiates and terminates an exchange of positioning assistance-GPS-related information with a SAS. The GPS-related information received from the SAS can be used by the RNC to either provide assistance data to a particular UE through dedicated signalling or to build up System Information Blocks containing assistance data to be broadcast to UEs in a particular area.

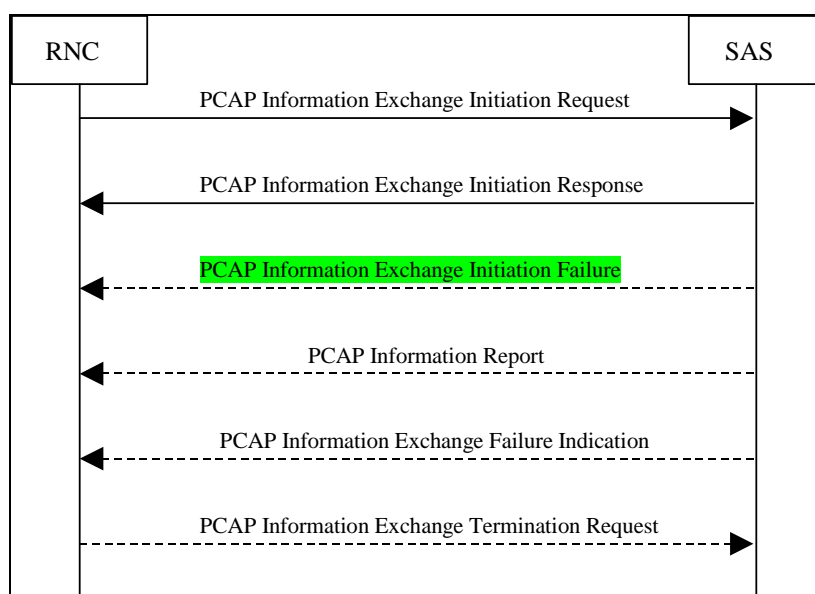


Figure 6.7: PCAP Information Exchange Message Flow

1. The RNC initiates a PCAP Information Exchange Initiation Request Message. This message contains data necessary for the SAS to provide the requested assistance-GPS-related information to the RNC. Upon reception of this message, the SAS shall provide the requested assistance-GPS-related information according to the reporting parameters given in the request. These parameters specify how the assistance-GPS-related information is to be reported (i.e. on-demand, periodically, or on-modification).
2. If the SAS is able to determine the information requested by the RNC, it shall respond with a PCAP Information Exchange Initiation Response Message.
3. If the SAS cannot provide the requested assistance-GPS-related information, it shall return a PCAP Information Exchange Initiation Failure Message.
4. In cases where the RNC has specified that the assistance-GPS-related information is to be reported periodically or on-modification, the SAS shall return the requested information in one or more PCAP Information Report Messages.
5. In cases where the RNC has specified that the assistance-GPS-related information is to be reported periodically or on-modification, the SAS may initiate an Information Exchange Failure Indication Message to notify the RNC that the requested information associated with a particular reporting activity can no longer be reported.
6. In cases where the RNC has specified that the assistance-GPS-related information is to be reported periodically or on-modification, the RNC may terminate a particular information reporting activity by initiating a PCAP

Information Exchange Termination Request Message. Upon reception, the SAS shall terminate the particular information exchange activity indicated by the RNC.

This position estimate call flow is applicable to UEs that support the following method types:

- UE-assisted;
- UE-assisted is preferred, but UE-based is allowed;
- UE-based is preferred, but UE-assisted is allowed.

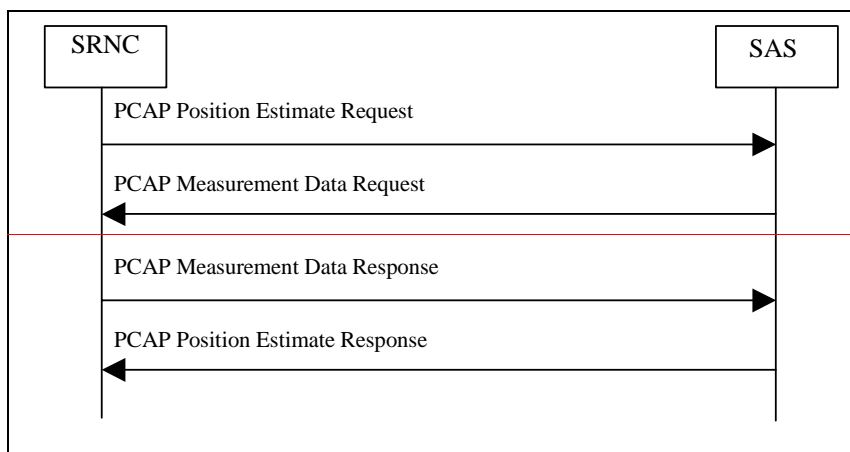


Figure 6.6: PCAP Position Estimate Message Flow

1. The SRNC determines that the SAS should be invoked via a PCAP Position Estimate Request Message. This message contains data necessary for the SAS to obtain a position estimate for a UE. Specifically the following data is included: an initial position estimate of the UE, a GPS-UTRAN time relationship uncertainty, and the method type (UE-based / UE-assisted preferences or UE-assisted).
2. The SAS prepares the appropriate GPS assistance data and sends a PCAP Measurement Data Request Message to the SRNC. The SRNC and UE then perform the call flow shown in Figure 6.1. For UE-based scenarios, the position is available to the SRNC at this point.
3. For UE-assisted scenarios, the SRNC sends the GPS measurements obtained from the UE to the SAS where further processing occurs to obtain the position estimate of the UE. In UE-based scenarios the position is not returned to the SAS, but a PCAP Measurement Data Response Message is still returned such that the PCAP Measurement Data Request Message is properly terminated.
4. For UE-assisted scenarios, the SAS calculates the position estimate and forwards it to the SRNC in a PCAP Position Estimate Response Message. If the SAS can not fulfil the request, a PCAP Position Response Failure Message is returned. In UE-based scenarios the position estimate is not returned to the SRNC, but the PCAP Position Estimate Response Message is still returned such that the PCAP Position Estimate Request Message is properly terminated.

6.6.5.1.2 PCAP Implicit GPS Assistance Data

The implicit GPS assistance data call flow is triggered by a request for a position estimate for a UE that supports only the UE based positioning method.

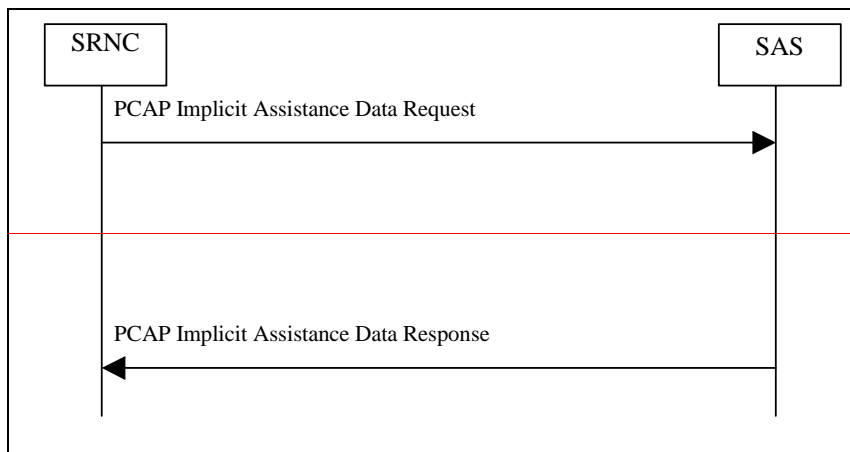


Figure 6.7: PCAP Implicit GPS Assistance Data Message Flow

1. The SRNC determines that the SAS should be invoked via a PCAP Implicit Assistance Data Request Message. This message informs the SAS that a UE-based positioning attempt is about to occur and requests that the SAS generate the appropriate GPS assistance data. This message contains an initial position estimate of the UE and a GPS-UTRAN time-relationship uncertainty.
2. The SAS prepares the appropriate GPS assistance data and sends a PCAP Implicit Assistance Data Response Message to the SRNC. The SRNC and UE then perform the call flow shown in Figure 6.1. If the SAS can not fulfil the request, a PCAP Implicit Assistance Data Failure Message is returned.

6.6.5.1.3 PCAP Explicit GPS Assistance Data

The explicit GPS assistance data call flow is triggered by a request for GPS assistance data initiated by a UE by means of NAS signalling or by Access Stratum (i.e., a UE requesting additional assistance data during a position estimate call flow (Figure 6.6) or following an implicit assistance data call flow (Figure 6.7)).

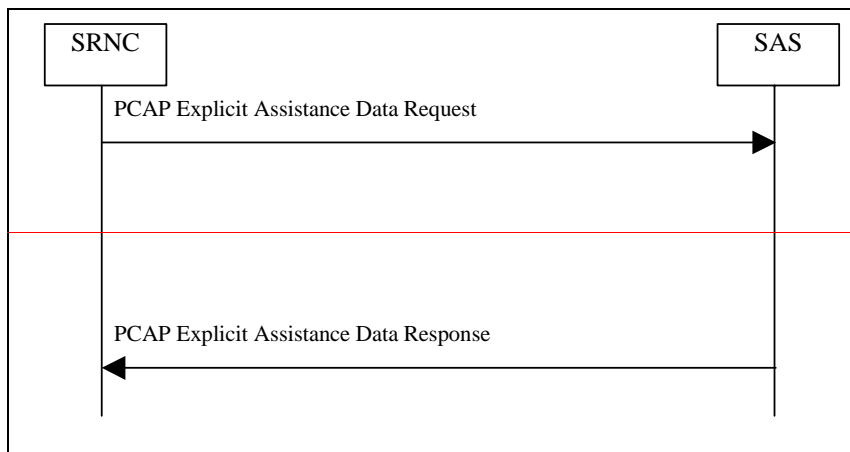


Figure 6.8: PCAP Explicit GPS Assistance Data Message Flow

1. The SRNC determines that the SAS should be invoked via a PCAP Explicit Assistance Data Request Message. This message contains an initial position estimate of the UE, a GPS-UTRAN time-relationship uncertainty, and a list of the types of GPS assistance data being explicitly requested.
2. The SAS prepares the requested GPS assistance data and sends a PCAP Explicit Assistance Data Response Message to the SRNC. The SRNC and UE then perform the call flow shown in Figure 6.2. If the SAS can not fulfil the request, a PCAP Explicit Assistance Data Failure Message is returned.

6.6.5.1.4 PCAP Broadcast Data

The broadcast data call flow is triggered by requests for GPS broadcast data by a CRNC.

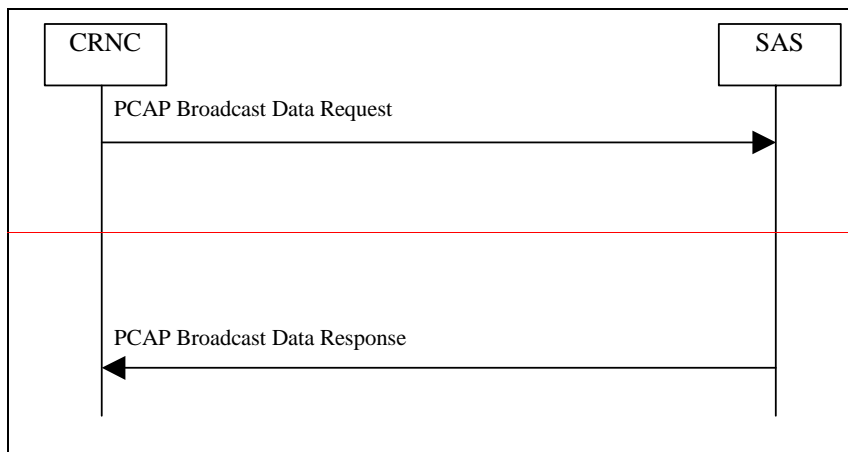


Figure 6.9: PCAP Broadcast Data Message Flow

1. The CRNC determines that the SAS should be invoked via a PCAP Broadcast Data Request Message. This message contains data necessary for the SAS to provide the appropriate GPS broadcast data to the SRNC. Specifically it contains a reference position estimate and a GPS-UTRAN time relationship uncertainty.
2. The SAS prepares the appropriate GPS broadcast data and sends a PCAP Broadcast Data Response Message to the SRNC. If the SAS can not fulfil the request, a PCAP Broadcast Data Failure Message is returned

6.6.5.1.5 PCAP Abort

If the SRNC needs to terminate a positioning attempt for any reason (i.e., SRNS relocation) it shall send a PCAP Abort Message to the SAS.

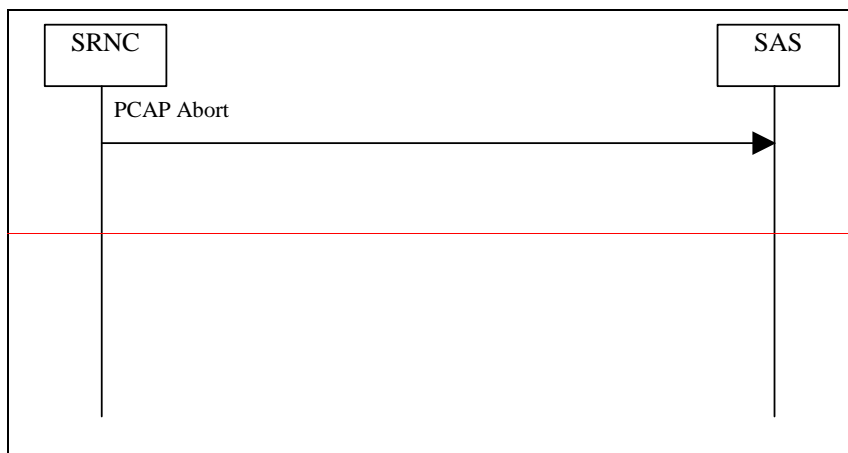


Figure 6.10: PCAP Abort Message Flow

1. The SRNC determines that an ongoing positioning attempt in progress at an SAS should be stopped and sends a PCAP Abort Message to the SAS. This message informs the SAS to terminate all processing associated with a particular positioning attempt.